AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (original) A set-up method for a loudspeaker system capable of generating at least one directed beam of audio sound, said loudspeaker system being in a room, said room comprising a listening position, said method comprising the steps of:
   - emitting signals from the loudspeaker system into said room;
   - registering said signals and/or at least one of their reflections at one or more locations within said room;
   - evaluating said registered signals to determine a first set of directing parameters for a future audio beam.

2. (original) The method of claim 1, further comprising:
   - using said directing parameters to direct said beam of audio sound into the desired direction.

3. (currently amended) The method of claim 1 ~~or 2~~, wherein said loudspeaker system comprises an array of electro-acoustic transducers.

4. (original) The method of claim 3, wherein each signal is emitted from a single electro-acoustic transducer in the array.

5. (currently amended) The method of claim 2, ~~3 or 4,~~ wherein each signal is emitted from a plurality of electro-acoustic transducers in the array so that the signal is emitted in a desired direction.

6. (original) The method of claim 3, wherein different signals are simultaneously emitted from different electro-acoustic transducers.

7. (original) The method of claim 6, wherein the different electro-acoustic transducers are located at an edge position and/or the centre of the transducer array.

8. (currently amended) The method of ~~any one of the preceding claims~~ claim 1, wherein the registering step includes the step of positioning at least one microphone in said room and recording the signals and/or at least one of their reflections using said at least one microphone.

9. (original) The method of claim 8, wherein there are a plurality of microphones arranged in a known geometric configuration, preferably a tetrahedral configuration.

10. (currently amended) The method of claim ~~8 or 9~~, wherein said microphone is physically positioned in/on the loudspeaker system.

11. (currently amended) The method of ~~any one of the preceding claims~~ claim 1, wherein the evaluating step includes the step of determining the listening position relative to the location of the loudspeaker system.

12. (currently amended) The method of ~~any one of the preceding claims~~ claim 1, wherein the evaluating step includes the step of identifying multiple acoustic paths to the listening position.

13. (original) The method of claim 12 wherein the evaluating step further includes assigning different audio channels to different paths.

14. (currently amended) The method of ~~any one of the preceding claims~~ claim 1, wherein the evaluating step includes the step of identifying clusters of reflections in the registered signals.

15. (currently amended) The method of ~~any one of the preceding claims~~ claim 1, further comprising using pre-known data relating to the geometry of the room to exclude beam directions.

16. (original) The method of claim 15, wherein the pre-known data are provided by a human operator said method including the step of prompting for the input of said data.

17. (original) The method of claim 15, wherein the pre-known data are provided by a previous application of a set-up method.

18. (currently amended) The method of ~~any one of the preceding claims~~ claim 1, wherein said evaluating step comprises recording the time elapsed between emitting the signals and receiving the first reflection at a location within said room.

19. (currently amended) The method of claim 10 ~~when dependent on claim 3~~, wherein said microphone is positioned at or near the plane of said array of electro acoustic transducers, preferably at the centre of said array.

20. (currently amended) The method of ~~any one of the preceding claims~~ claim 1, wherein said evaluating step comprises determining the distance of surfaces from the loudspeaker system by scanning a sound beam around said room.

21. (currently amended) A method according to ~~any one of the preceding claims~~ claim 1, wherein only a first predetermined portion of signals received are evaluated in said evaluating step.

22. (currently amended) A method according to ~~any one of the preceding claims~~ claim 1, wherein the signals emitted from the loudspeaker system are focused using said loudspeaker system such that the focus point is near to an estimated reflection surface.

23. (original) A method according to claim 22, wherein a feedback loop is used to provide that the beam focus tracks the estimated reflection surface position as the beam moves.

24. (currently amended) A method according to ~~any one of the preceding claims~~ claim 1, wherein at least one of said registered signals is multiplied by a phase shifted version of the emitted signal to which it corresponds so as to discriminate signals reflected by surfaces that lie a predetermined distance from the loudspeaker system.

25. (currently amended) A method according to ~~any one of the preceding claims~~ claim 1, wherein at least one of said signals emitted by the loudspeaker system comprises a chirp signal, said chirp signal preferably reducing in frequency during its duration.

26. (original) A method according to claim 25, wherein a matched filter is used at the receiver to decode a reflected chirp signal so as to improve signal to noise ratio whilst maintaining adequate range-resolution.

27. (currently amended) The method of ~~any one of the preceding claims~~ claim 1, wherein the evaluating step includes determining the angle of reflective surfaces relative to the Sound Projector by analysing the time of receipt of a plurality of received signals, each representing the first reflection of a corresponding transmitted signal.

28. (currently amended) The method of ~~any one of the preceding claims~~ claim 1, wherein the evaluating step includes determining the angle of reflective surfaces relative to the Sound Projector by analysing the relative amplitude of a plurality of received signals, each representing the first reflection of a corresponding transmitted signal.

29. (currently amended) A method according to ~~any one of the preceding claims~~ claim 1, wherein said evaluating step comprises analysing a change in received first reflection signal amplitude and analysing a change in time of first reflection so as to determine whether the reflecting surface is continuous, planar or curved.

30. (currently amended) A method according to ~~any one of the preceding claims~~ claim 1, wherein the direction of signals emitted from the loudspeaker system is set to track detected discontinuities between reflective surfaces in the room.

31. (original) The method of claim 30, wherein the direction of signals emitted by the loudspeaker system is caused to veer to one side of an estimated discontinuity so as to confirm the presence of said discontinuity in the reflective surfaces.

32. (currently amended) A method according to ~~any one of the preceding claims~~ claim 1, wherein it is evaluated that there is a "hole" in the room surface in a particular direction when no signal is registered following an emission of a signal from the loudspeaker system and it is thereafter determined that audio sound signals are not directed towards said "hole".

33. (currently amended) A method according to ~~any one of the preceding claims~~ claim 1, wherein said loudspeaker system is a surround sound system intended for the playback of surround sound channels.

34. (original) The method of claim 6, wherein the signals are emitted as spatially constrained beams of sound to a range of directions, the spatially constrained beams of sound being laterally constrained to form narrow vertical beams.

35. (original) The method of claim 34, wherein the spatially constrained beams of sound are laterally and vertically constrained to form narrow point or ellipsoidal beams.

36. (original) A surround sound system having a set-up function, said system comprising:

means for prompting a user to enter data regarding the room geometry and/or optimum listening point position;

means for recording the data entered by the user; and means for determining the direction of emission of surround sound channels in accordance with the responses of the user.

37. (original) A surround sound system having an at least semi-automatic set-up function, said system comprising:

means for emitting directional beams of set-up sound signals;

means for registering said signals and/or at least one of their reflections at one or more locations within the listening room; and

means for evaluating the registered signals so as to obtain data useful in configuring the surround sound system.

38. (original) A system according to claim 37, wherein said means for evaluating signals comprises a signal processor that outputs the time of first reflection of a

transmitted signal and/or the amplitude of said reflected signal relative to the corresponding transmitted signal.

39. (currently amended) A system according to claim 37 ~~or 38~~, wherein said system is configured to firstly determine the position of the major reflecting surfaces in the room in which it is located and thereafter to determine the directions in which the surround sound channels will be emitted.

40. (currently amended) A system according to ~~any one of claims 37 to 39~~ claim 37, wherein said system comprises an array of electro-acoustic output transducers for outputting directional sound beams.

41. (currently amended) A system according to ~~any one of claims 37 to 46~~ claim 37, wherein said means for registering reflections comprises at least one microphone.

42. (currently amended) A system according to claim 40 ~~when dependent on claim 46~~, wherein said at least one microphone is positioned in said surround sound system close to said array of output transducers.